UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering

M O N T H L Y N E W S L E T T E R

Vol. 3. July, 1933 No.1

Every employee should learn the name and headquarters or temporary location of the Employees' Compensation Commission's physician in his territory, so that in case of accident to himself or another employee he will know to whom to go for treatment. Where there is an official representative of the Employees' Compensation Commission within reach, his services must be utilized. Too many cases are being reported of an injured person being taken to other than a Federal physician, a practice which has resulted in disallowance of part of the expenses in some cases. C.A. Forms should always be submitted to the Washington Office in duplicate.

Attention is called again to the fact that employees of the Bureau operating Government owned automobiles are responsible for personal injuries to others in case they are involved in an automobile accident. Any one who wishes liability insurance protecting him against claims for such damages may provide it for himself. One company in Washington (name furnished on request) has for years given reasonable group insurance rates on Government owned cars or cars assigned to Government use. Some have found, however, that it is possible to obtain insurance at lower rates from the companies which insure their personal cars.

Beginning July 15, field employees formerly paid once each month will be paid twice a month. A Bureau memorandum is being issued covering this change and giving necessary instructions.

L. A. Jones conferred with representatives of the Forest Service at Louisville, Ky., and Milwaukee, Wisc., relative to the gulley-control work being done by camps of the Civilian Conservation Corps. L. C. Tschudy has been employed to help supervise this work and assigned to the District Forester's office at Milwaukee. Mr. Tschudy has inspected the camps in Wisconsin, Minnesota, and North Dakota, and has found nearly all performing good work under competent supervision.

C. L. Hamilton has been employed to assist F. O. Bartel at Louisville, Ky. Messrs. Bartel and Hamilton have inspected camps and made contacts

with officials in Kentucky, Indiana, Ohio, Missouri, Iowa, and Minnesota. Camps have been inspected by W. D. Ellison in Texas, Oklahoma, Mississippi, and Alabama. Mr. Ellison has conferred with State officials administering the work in these States.

Technical Bulletin 358 "Laboratory and Field Tests of Concrete Exposed to the Action of Sulphate Waters" by D. G. Miller and P. W. Manson has just been received from the printer.

D. L. Yarnell delivered a paper covering results of his tests on the flow of water around bends before a meeting of the American Society of Civil Engineers in Chicago, June 29. The loss of head in a bend varied as much as 400 per cent depending on the velocity distribution at the beginning of the bend. It was also found that after rating a bend it could be used as a flow meter.

C. E. Ramser, H. S. Riesbol, R. W. Baird, H. O. Hill and W. D. Ellison attended the fourth annual meeting of the Southwest Soil and Moisture Conservation Conference at Texarkana, Texas-Arkansas, on July 11. Mr. Ramser presented a paper on "Erosion Control by Terracing on the Federal Soil-Erosion Experiment Farms" and H. S. Riesbol and R. W. Baird presented papers on "Some Definite Information Regarding the Cost of Terracing." The interest in erosion shown at the meeting was probably greater than was shown at any former meeting. Most of the papers related to erosion-control methods, whereas at former meetings discussions of the destructive effects of soil erosion have predominated.

On the unterraced area of moderate slope on the State farm at Ardmore, Okla., following a rain of 6.1 inches in 33 hours, 11.1 tons of soil per acre were eroded from 1.6 acres having a slope of 1.9 feet per 100 feet according to Mr. Bergschneider. This contradicts the commonly prevailing opinion that not much erosion occurs on lands of moderate slopes.

It has been found on the Guthrie project, as reported by H.S.Riesbol, that soil erosion increased directly with the spacing of the terraces when the ground was in clean-cultivated crops, and that when the same field was cropped to oats closely drilled the soil loss was practically the same regardless of the spacing of the terraces. Small gullies developed on the wider spacings when in cultivated crops, which no doubt was responsible for the greater soil losses for the wider spacings. No appreciable gullies developed between any of the terraces in this terrace-spacing experiment when cropped to oats.

P.C. McGrew reports that run-off from rain or melting snow causes serious erosion on cultivated slopes on the Pullman erosion farm, especially on areas which have been fallowed. The erosion is negligible wherever the soil has vegetative cover such as wheat stubble or other grain stubble, alfalfa, sweet clover, or native vegetation. Run-off may result from rain, melting snow, or a combination of both, when the ground is either frozen, partly frozen or free from frost. He also states that the soil loss for an unterraced watershed was at the rate of 1 inch in 12 years on a slope of 14.5 per cent. This loss was about six times as much as from an adjacent terraced area.

R. W. Baird reports that during a two-year period a variable-graded terrace 1,700 feet long with 5-foot spacing and grade of 0 to 3 inches per 100 feet showed a soil loss of 80.6 per cent and a water loss of 77 per cent as much as a uniform-graded terrace of the same length and spacing with a grade of 3 inches per 100 feet.

According to A. T. Holman much more water stands in the channels of the level terraces after heavy rains than in the channels of the terraces with 2 inches fall per 100 feet. This causes considerable delay and in-

convience in crop tillage, but it has not been determined whether or not standing water in the terrace channels affects crop yields. Appreciable scouring is visible in the water channels of the terraces having 6, 8, and 10 inches fall per 100 feet, whereas no scouring occurred and not much standing water was found on terraces with uniform grade of 4 inches per 100 feet and with variable grade of 1 to 4 inches per 100 feet.

A progress report on "Studies in the Irrigation of Citrus and Dates in the Salt River Valley, Arizona" was submitted by Karl Harris.

Penetration of cotton plant roots at the rate of an inch a day was indicated by observations made by Lloyd N. Brown on experimental plots in San Joaquin Valley, Calif. The roots of five plants grown from seed planted May 23 were dug out about a month after planting and found to average about 30 inches in length. This agrees with similar data secured last year.

In connection with the Kootenai investigation, L. T. Jessup prepared data, exhibits and a summary for the hearing before the International Joint Commission. Computations have been practically completed for all 12 districts, showing the reduction in yield in terms of spring wheat that would result from a decrease in depth to water table of 1 foot and for a decrease of 2 feet.

An investigation of the water supply for the Fallon Wild Life Refuge, near Fallon, Nevada, was made by J. C. Marr upon request of the Biological Survey. While in Nevada, Mr. Marr also examined the drainage and irrigation conditions on the Lovelock project for the Berkeley Federal Land Bank, in which examination the University of Nevada is cooperating.

Sand and silt conditions of the Salt Lake municipal water supply were investigated by W. W. McLaughlin and R. L. Parshall. The problem is to eliminate the fine sand from the water mains as a means of protecting their service water mains. The inspection showed that it would be possible to install a vortex tube sandtrap at the municipal hydraulic power plant where the tail water is diverted directly into the Salt Lake City water mains. It is planned to construct models of the vortex tube to demonstrate the feasibility of using this type of device.

The problem of increasing the capacity of a gunite-lined main canal of the Ervine Ranch of some 40,000 acres near Santa Ana in southern California was investigated by Fred C. Scobey. It was found that a very roughly finished surface had caused a decrease of from 15 to 20 per cent below the estimated capacity. Recommendations were made for increasing the capacity of the canal.

R. B. Gray spent June 17 at Toledo in connection with the corn borer machinery project. On June 19 he viewed the performance of a new, light-weight, single-furrow tractor at St. Joseph, Michigan, and inspected a rubber-tire-mounted thresher and combine at La Porte, Ind. On these machines, V-belt drive was used in place of the conventional flat belt. He spent June 27 at Moorestown, N.J., with V. D. Young, discussing with representatives of the Bureau of Entomology cooperative plans dealing with corn borer and Japanese beetle control machinery.

The corn borer control machinery force at Toledo, which has dwindled considerably because of the Economy Act, took up new quarters at 2021 Adams Street the latter part of June. They were formerly located at 615 Front Street. The corn borer office in New Jersey has been moved from 12 Pierce Avenue, Trenton, N. J. to Moorestown, N. J. where some cooperative work on Japanese beetle machinery control measures is being undertaken. L. G. Schoenleber has

been transferred from the corn borer project at Toledo to the corn production project at Ames, Iowa. I. F. Reed has been transferred from the corn borer project at Toledo to the cotton machinery project at Auburn, Ala. Frank Irons has been temporarily transferred from the corn borer project in New Jersey to the soil erosion project at Raleigh, N. C., under the Division of Drainage and Erosion Control.

Fertilizer applications for a placement study with lima beans were made by Messrs. Cumings and Sharp at Onley, Virginia on June 23, which finished the spring field work of the fertilizer machinery project. The tobacco experiments organized this year indicate to date that fewer plants die and early growth is greater when the fertilizer is placed in a band at each side of the row than when placed under the plant or when mixed with the soil in the root zone.

E. M. Mervine reports that an excellent stand of beets has been obtained on the 10-acre experimental plot at Fort Collins, and that the beets in the fertilizer-placement plots are of different sizes, showing the effect of the different applications.

Experimenting with the mower-crusher in a field of soybeans where the amount of green material produced exceeds six tons to the acre, E. D. Gordon reports that there was some choking caused by viny material at the outer end of the cutter bar being intertwined with adjacent uncut material. Because crushed soybeans wilt more rapidly in the field, and because evaporation in the drier is nearly 5 per cent faster than evaporation from uncrushed hay under similar drying conditions, dry-material output can be stepped up conservatively 20 to 25 per cent by harvesting with the mower-crusher.

W. M. Hurst visited Nazareth, Pa., on June 13, to inspect a new hay drier which has recently been installed by a commercial firm. The drier is of the apron conveyor type. The hay is held between two endless apron conveyors and festoons are formed by a mechanism as the aprons loaded with hay enter the drying chamber. By holding the hay in this manner a much shorter drying chamber is required than when one apron is used.

A paper entitled "Study of 100 Wisconsin Barns" was delivered by M.A.R. Kelley at the annual meeting of A.S.A.E. at Lafayette, Ind. Mr. Kelley later visited dairy farms and cream stations near Genesee Depot, Wis., and secured information on the effect of weather changes on milk yield.

Wallace Ashby and A.D. Edgar attended the A.S.A.E. meeting, the former presenting a report on the Committee on Farmhouse Standards and Design.

Tests of vaporizing type oil burners suitable for farm use by A. H. Senner, are nearing completion. These include oil burning units for use in kitchen ranges and oil burning water heaters and circulator heaters. Mr. Senner also tested a kitchen range and a circulator heater using both wood and coal as fuels to secure data for comparison with the oil burners.

The Plan Exchange Service has developed in the past month so that the Division of Plans and Service has been able to exchange with 17 colleges drawings of 63 designs of farm structures and equipment. Two hundred and eighty Vandyke positives have been distributed from which the colleges can produce blueprints.